

National Bioenergy Center

*An inclusive center without walls applying
resources of the U.S. Department of Energy
National Laboratory System to advance
technology for producing fuels, chemicals,
materials, and power from biomass*



U.S. Department of Energy
Energy Efficiency and Renewable Energy

The National Bioenergy Center (NBC) has extensive expertise in the science underlying biomass use and conversion technologies. You can license or otherwise benefit from this expertise for your production of fuels, chemicals, materials, and power from biomass.

- Metabolic engineering such as developing a co-fermenting organism for both five- and six-carbon sugars
- Rapid analysis systems for quality and process control for biomass industries
- Novel catalytic separation of biomass into cellulose, hemicellulose, and lignin
- Advanced gas cleanup technology for small modular and utility-scale biomass syngas production
- Dedicated bioenergy crops and combined grain and residue harvest systems
- Nearly a dozen biomass power and fuel technologies recognized by prestigious R&D 100 awards.



The NBC's world-class facilities can also be made available to industrial partners, allowing them access to development and testing from laboratory-bench- to pilot-plant-scale without the necessity to build special facilities of their own.

- A unique 10,000-square-foot pilot plant for biological or chemically processing of up to one ton per day of raw lignocellulosic biomass, sugar, or intermediate feedstocks
- A fully integrated Thermochemical Users Facility for gasification or pyrolysis of up to one-half ton per day of biomass and for electrical generation or downstream chemical catalysis catalytic conversion of the products
- Membrane separators, biocatalytic reactors, thermocatalytic reactors, a wet-gasification pilot plant, and a wide range of other biomass-processing equipment.




The NBC also has the best resources available for analysis of biomass and biomass processes.

- Traditional wet chemistry—NBC scientists wrote most of the procedures
- Molecular beam mass spectrometry, liquid chromatography mass spectrometry, FTIR, and other rapid and complete compositional analyses
- Nearly instantaneous, non-destructive biomass analysis with NREL's own near-infrared spectrometry and multivariate analysis system
- Surface characterization with environmental scanning electron, transmission electron, atomic force, and other microscopy
- Combinatorial screening of biological and chemical catalysts
- Technoeconomic and life-cycle analysis
- A searchable comprehensive database of biomass resource assessments.

DOE established the National Bioenergy Center in October 2000. The NBC has primary responsibility for carrying out the agenda of the Office of the Biomass Program of the Office of Energy Efficiency and Renewable Energy (EERE) of the U.S. Department of Energy. Collaborating with industrial, academic, related EERE and Office of Science programs, U.S. Department of Agriculture laboratories, and other governmental research, development and commercialization efforts is central to that agenda. The National Renewable Energy Laboratory, Oak Ridge National Laboratory, Argonne National Laboratory, Idaho National Engineering and Environmental Laboratory, and Pacific Northwest National Laboratory all contribute to National Bioenergy Center efforts.





“The need to supplement transportation fuel supplies with sustainable, domestic resources is one of our highest priority energy needs. The National Bioenergy Center is at the center of our efforts to develop technology to promote the growth of biorefineries that would produce a wide range of valuable fuels, chemicals, and materials, as well as power, from domestic renewable biomass resources.”

— David Garman, Assistant Secretary of Energy
for Energy Efficiency and Renewable Energy





National Bioenergy Center expertise, capabilities, facilities, and technologies can be made available to you through cooperative research and development agreements, work-for-others agreements, licenses, and other collaborative business arrangements. Please contact us about the research and development work you want to do.

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Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable.

1000 Independence Avenue, SW, Washington, DC 20585

By the National Renewable Energy Laboratory, a DOE national laboratory

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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